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South Alaska District
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FILE: (PSD) PRUDHOE BAY UNIT 1a
NORTH SLOPE, AK

November 7, 1978

Mr. Michael M. Johnston, Chief
Air Compliance Evaluation
Section
U.S. Environmental Protection
Agency
Region X
1200 Sixth Avenue
Seattle, WA 98101

Reference: You Letters to Mr. Norgaard (ARCo) and
Mr. Nelson (Sohio) dated October 4, 1978

Dear Mr. Johnston:

Atlantic Richfield and Sohio Petroleum Company submitted a PSD permit application to Region X on August 2, 1978 for certain air emitting facilities to be installed in the Prudhoe Bay Oil Field, Prudhoe Bay, Alaska. The referenced letters requested additional information for that application; this letter responds to that request.

Attached is a copy of a letter response to your questions from Dames and Moore, our contractor for this effort. I believe that letter response will fully address your questions and could stand on its own. However, there are several additional areas which should be pointed out to put our reply in proper perspective.

Physical Stack Height

The stack height for many stacks used in the modeling were taken from engineering drawings and from documentation in State files. Those heights do reflect a lower than actual stack height, and the resultant modeling gives very conservative results for ground level receptors. A measure of this conservatism is well shown in the additional modeling done by Dames & Moore in the attached letter. Detailed "as built" stack heights were not used due to the short time allowed for the study and the strong desirability to use previously inventoried data, conservative as it is.

Plume Rise

Use of a 70% valve for the Briggs plume rise for turbines does not appear appropriate for the Prudhoe Bay facilities. The NSPS support document suggesting this modification is apparently based on two studies. Those studies were very limited in scope and were not designed to lay a basis for modifying Briggs' work. Applying the results of that study to Prudhoe Bay is inappropriate. From a telephone conversation with Dr. Briggs, there appears to be no reason gas turbine plumes should behave any differently from any other plume. As you are aware, Briggs' work was developed on an extensive data base, and not on limited experimental work.

Finally, it is appropriate to point out that approved and well established modeling methods were used for this application, conservative as they are. Modification of these methods was neither desirable nor necessary for this study, and it is inappropriate to make those kind of modifications without a strong data base for justification.

I'd like to express my appreciation for the opportunity to address these questions. Please note that we are rapidly approaching the time when the Unit Operators plan to make commitments for construction. If there is any way we can help expedite the review process, please don't hesitate to call me (907-265-6533).

Very truly yours,

W. P. Metz
Senior Environmental Engineer

WPM:mf

Enclosure

cc: H. Schmidt - Sohio, Anchorage
C. M. Nelson - Sohio, Anchorage
P. B. Norgaard - ARCo, Anchorage
R. Chivvis - EPA, Anchorage
C. Fahl - Dames & Moore, Anchorage
T. Hanna/D. Estes - ADEC, Juneau